

WHAT IS CLAIMED IS:

1. A power drive mechanism for power assisted opening and closing of a liftgate pivotally mounted to a motor vehicle, said power drive mechanism comprising:
 - a linking arm pivotally connectable with the liftgate;
 - 5 a crank arm pivotally mountable on the vehicle and pivotally connected with the linking arm;
 - a pivotally mounted gear train;
 - a drive motor operatively connected with said crank arm through said gear train, said gear train being movable between an engaged position and a disengaged position, said
 - 10 engaged position effecting a driving engagement between the drive motor and the crank arm such that energizing said drive motor drivingly rotates said crank arm to responsively effect said opening and closing of said liftgate and said disengaged position disengages said drive motor from said crank arm permitting movement of said crank arm without backdriving said drive motor;
 - 15 an actuator operatively connected with said gear train and being operable to effect said movement of said gear train; and
 - a holding linkage operatively connected between said gear train and said actuator to maintain said driving engagement once said actuator moves said gear train into the engaged position.
- 20 2. A power drive mechanism as defined in claim 1 wherein said holding linkage comprises a holding link and a connecting link, said holding link pivotally connected with said bracket assembly and said connecting link, said actuator includes a pivotally mounted actuating link pivotally connected to said bracket assembly and said holding link.
3. A power drive mechanism as defined in claim 2 wherein said power drive
- 25 mechanism further comprising a fixedly mounted pin and said holding link includes a slot having a holding notch, said holding link slidably receiving said pin in said slot for guiding movement of said holding link, such that when said holding linkage engages said pin is in said holding notch, said holding linkage is biased to maintain said engaged position of said gear train.
- 30 4. A power drive mechanism as defined in claims 1 or 3 wherein said power drive mechanism further including a switch electrically communicating with said actuator and operatively associated with said crank arm such that movement of said crank arm into an open position engages said switch to responsively cause said actuator to move said gear

train to said disengaged position.

5. A power drive mechanism as defined in claim 4 wherein said gear train comprises a bracket assembly rotatably mounting a plurality of gears in driving engagement with at least one other of said plurality of gears, and a spring biasing said gear train to said
5 disengaged position.

6. A power drive mechanism as defined in claim 5, wherein said crank arm has a sector gear having a series of teeth on an inside circumferential surface thereof, said series of teeth in meshing engagement with at least one of said plurality of gears.

7. A power drive mechanism as defined in claim 6 wherein said power drive
10 mechanism further comprises a mounting bracket on which said crank arm, drive motor, pin and actuator are mounted, said mounting bracket being configured to attach to the vehicle.

8. A power drive mechanism as defined in claim 7 wherein said mounting bracket is diecast utilizing a metal selected from a group comprising aluminum and zinc.

15 9. A power drive mechanism for providing power assistance to open and close a liftgate pivotally mounted on a vehicle, said motor vehicle including a body controller to control the operation of said power drive mechanism, said liftgate including a power operated latch assembly capable of primary and secondary latching engagement with a striker on the vehicle to releasably latch said liftgate and of power operated unlatching
20 movement of said latching assembly, said power drive mechanism comprising:

a mounting bracket mountable on a "D" pillar of said vehicle;

a linking arm pivotally connected with the liftgate;

a crank arm pivotally mountable on the mounting bracket and pivotally connected with the linking arm;

25 a gear train pivotally mounted on said mounting bracket;

a drive motor mounted to said mounting bracket, said drive motor operatively connected with said crank arm through said gear train, said gear train being movable between an engaged position and a disengaged position, said engaged position effecting a driving engagement between the drive motor and the crank arm such that energizing said
30 drive motor drivingly rotates said crank arm to responsively effect said opening and closing of said liftgate and said disengaged position disengages said drive motor from said crank arm permitting movement of said crank arm without backdriving said drive motor;

an actuator operatively connected with said gear train and being operable to effect

said movement of said gear train;

a holding linkage operatively connected between said gear train and said actuator to maintain said driving engagement once said actuator moves said gear train into the engaged position;

5 a switch mounted on said mounting bracket and switchable in response to movement of the crank arm, indicating open and closed conditions of the liftgate; and

an electronic control unit electrically communicating with said body controller, said latch assembly, said drive motor, said switch and said actuator.

10. A power drive mechanism as defined in claim 9 wherein said holding linkage
10 comprises a holding link and a connecting link, said holding link pivotally connected with said bracket assembly and said connecting link, said actuator includes a pivotally mounted actuating link pivotally connected to said bracket assembly and said holding link.

11. A power drive mechanism as defined in claim 10 wherein said power drive
15 mechanism further comprising a fixedly mounted pin and said holding link includes a slot having a holding notch, said holding link slidably receiving said pin in said slot for guiding movement of said holding link, such that when said holding linkage engages said pin is in said holding notch, said holding linkage is biased to maintain said engaged position of said gear train.

12. A power drive mechanism as defined in claim 9 wherein said vehicle further
20 comprises a gas strut assembly linking said liftgate to the vehicle and said electronic control unit de-energizes said drive motor after said liftgate has opened sufficiently to allow a gas strut assembly to continue opening said liftgate.

13. A power drive mechanism as defined in claim 9 wherein said gear train comprises a bracket assembly rotatably mounting a plurality of gears in driving engagement with at
25 least one other of said plurality of gears, and a spring biasing said gear train to said disengaged position.

14. A power drive mechanism as defined in claim 9, wherein said crank arm has a sector gear having a series of teeth on an inside circumferential surface thereof, said series of teeth in meshing engagement with at least one of said plurality of gears.

30 15. A power drive mechanism as defined in claim 9 wherein said mounting bracket is a diecast from a metal selected from a group comprising aluminum and zinc.